

ABSTRACT OF THE DISCLOSURE

A resonator minimizes degradation of the Q factor, accurately adjusts the frequency, and reduces the size and profile thereof. A voltage controlled oscillator including such a resonator includes a multilayer substrate. The multilayer substrate includes a first grounding conductor layer, a first dielectric layer, a strip line layer, a second dielectric layer, a second grounding conductor layer, and a third dielectric layer. A strip line is disposed on the strip line layer, and a microstrip line is disposed on the third dielectric layer. The strip line is connected to the microstrip line via a through hole to define the resonator. A portion of the second grounding conductor layer that faces the microstrip line is removed.